

<u>Lesson Title:</u> A Seed Spectacle	<u>Unit Title:</u> The Complete Plant Unit	<u>Teacher Name:</u> Texas Farm Bureau
<u>Lesson Purpose/Goal:</u> The students will gain a complete understating of parts and processes of plants.		<u>Time:</u> 1-2 Class periods?
<u>Instructional Objectives:</u> (Students...) <ol style="list-style-type: none"> 1. Analyze the parts of a bean by dissection; 2. Read and Discuss “Oh Say Can You Seed?”; 3. Create a bean book showing the parts of a seed; and 4. Conclude where these things are used in production agriculture. 		
<u>TEKS:</u>	<u>TAKS:</u>	
<u>Materials/Supplies Needed:</u> <ul style="list-style-type: none"> • Lima Beans, Cups of water, Bean Book Pages, “Oh Say Can You Seed?” book, Glue, Scissors, Paper Towels, Crayons/Colored pencils. 		
<u>References:</u> <ul style="list-style-type: none"> • “Oh Say Can You Seed?” by Bonnie Worth • Agriculture in the Classroom – Texas Farm Bureau – Tad Duncan & Craig Lenard 		
<u>Global Contextual Set:</u> (1. Where we have been; 2. Where we are going & why; 3. What we are doing today; 4. How learners should conduct themselves) <ol style="list-style-type: none"> 1. --- 2. Next, we will be learning about plants, seeds, and soils because these three things impact how we live each and every day. We eat plants, plant seeds and use soil everyday. 3. Today we will read a fun book and dissect seeds 4. Be prepared to be engaged in the activities, use your creative thinking skills, and have fun! 		
<u>Focus/Interest Approach/Anticipatory Set:</u> (Captures attention and focuses students’ thinking through physical/cognitive engagement. <i>Principle – Experience before label.</i>) <ul style="list-style-type: none"> • In a moment each of us will receive a lima bean seed that has been soaking in water for several hours. This seed will be soft due to the water absorption; this will make it easy to dissect! When you receive this seed it is very important to pay attention to the different parts of the bean. As we dissect the bean we will set each individual bean part on a sheet of paper so that we can see the parts easily. All of the parts have a name that we will learn in a moment, but for now think of what each individual part may be called. • We will take 5 minutes to complete this dissection. What questions do you have? 		
Lesson Content:		
<u>Objective 1:</u> (Analyze the parts of a bean by dissection) <i>(Include all content, activities, directions, scripting, etc. below. Use as much space as needed)</i>	<u>Teaching Method:</u> Surgeon	
This objective is done in the Focus/Interest Approach/Anticipatory Set.	<u>Notes:</u> Ask the Check for Understanding questions as they are dissecting the bean.	
<u>Checking for Understanding:</u> <ul style="list-style-type: none"> • Direct questioning: <ol style="list-style-type: none"> 1. <i>Johnny</i>, how many different parts did you see? 2. <i>Julie</i> did the bean split in half or stay as a whole? 3. <i>Tommy</i>, did you see anything that looked like a baby inside the seed? 		

Contextual Bridge:

- Now that we have dissected the lima bean seed let's learn exactly what those parts of the seed were and what they will do as they grow.

5. Objective 2: (Read and Discuss "Oh Say Can You Seed?")

(Include all content, activities, directions, scripting, etc. below. Use as much space as needed)

Now we will move on to read a book! The book is "Oh Say Can You Seed; All about flowering plants" by Bonnie Worth. As we are listening to the book be looking for the bean parts that we discovered a moment ago with our own beans.

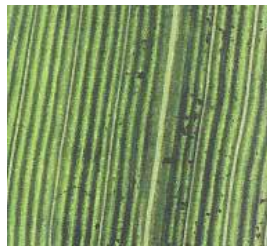
Read book to class, or read as a class!

The entire class did a great job listening to/reading our book, thank you.

- There is one thing we need to clarify about the seed parts. Remember back to when the cat in the hat was teaching us about the cotyledons (pp. 15). He said that the bean seed has two but others have one. There are two new words we need to learn to go along with this topic and they are monocot and dicot. A monocot has only one cotyledon and a great example of this is grass. A dicot has two cotyledons and a great example of this is a bean. Monocots typically have veins running parallel to one another; however, dicots typically have a webbed vein system, like an oak leaf.



dicot



monocot

- What looked familiar in the book?
- What parts of this book were new or different?
- What other things did the Cat in the Hat teach us about besides seeds?

Teaching Method:

Discussion

Notes:

Some words might be hard for younger students to pronounce.

Be sure to discuss any other questions there might be about the book at this point.

Checking for Understanding:

- What is the baby inside the seed called? *Embryo*
- What are the two halves of the seed called? *Cotyledons*
- What is the outside covering of the seed called? *Seed Coat*

Contextual Bridge:

- Now that Cat in the Hat has taught us about seeds and plants, let's see how much we remember!

Objective 3 & Guided Practice: (Create a bean book showing the parts of the seed)

(Include all content, activities, directions, scripting, etc. below. Use as much space as needed)

In a moment each of us will be receiving materials to make our very own bean book. This book will remind us what each part of the bean seed looks like and does. When we receive our materials more detailed directions will follow, so do not begin, we will do this activity together. Before we do this as a class I will demonstrate the process.

Teaching Method:

Method Demonstration

Notes:

<p>First we will color our Seed Coat Tan. Second we will color our Seed Leaves Yellow. Third that we will color our Embryo Green.</p> <p>The Fourth part of the process will be to cut these out along the solid lines. Be careful not to cut the dotted lines.</p> <p>Fifth we will fold the Seed Coat along to dotted line. Sixth we will fold the Seed Leaves along the dotted line. Seventh we will put the Seed Leaves inside the Seed Coat and place the Embryo in the middle. Eighth close the book and staple the book twice on the spine to hold everything together. Ninth we will cut the text squares out. When cutting the text boxes out cut along the dotted line. Finally we will coordinate the text with the pages in the book and glue them in. Be sure your name is written on the front cover underneath the title.</p> <p>Now that we have seen it done, let's do our own together.</p>	<p>Go through the exact same steps while helping the students complete their own bean book.</p>
<p><u>Checking for Understanding:</u></p> <ul style="list-style-type: none"> Walk around as the students are putting the books together to make sure they are grasping how the different layers go together. This is a formative visual assessment. 	
<p><u>Contextual Bridge:</u></p> <ul style="list-style-type: none"> All of the bean books look great! Now we know what the parts of a bean are, so let's explore how the seeds are used to make our food through agriculture! 	
<p><u>Objective 4:</u> Conclude where these things are used in production agriculture</p> <p>In order for us to eat food and wear clothes someone must grow plants that will make food and fiber. The person that does this for us is known as a farmer. Today we explored what a bean seed looks like outside and inside and we kind of understand how it grows. Farmers use seeds to grow our food and fiber on their farms just like we will use seeds to plant in our garden in the next couple of days.</p> <p>What do you think the difference is between the seeds that we use and the seeds the farmer will use? (nothing)</p> <p>Farmers produce our food and fiber from seeds just like the ones we dissected today. The main difference between the farmer's seeds and our seeds is how they get into the ground. Our seeds will be planted by hand, while the farmer plants with a machine.</p> <p>We owe a lot to the farmer who plants millions of seeds each year in order to put food on our plate and a shirt on our back.</p>	<p><u>Teaching Method:</u> Lecture</p> <p><u>Notes:</u> The goal here is to show the students how important agriculture is to them each day.</p>
<p><u>Check for Understanding:</u> What is the main difference between the seeds we use and the seeds a farmer uses?</p>	

(Nothing)

Contextual Bridge: Thank you farmers! Now let's review this information once more.

Independent Practice: *(Individualized and independent activity occurring in the classroom. Include all activities, directions, and description below.)*

- Create a short verbal or written quiz to check for the students understanding once again.

Closure - Global Contextual Set: (1. Where we have been; 2. Where we are going & why; 3. What we will do next; 4. How learners should conduct themselves or what supplies are needed next.)

1. Today we learned about seeds and their parts.
2. We are working towards understanding how plants grow and reproduce, so
3. Tomorrow will read the same book again, but we will be looking for different aspects.
4. Be prepared to get your hands dirty, and work hard because we will be building some cool stuff!

Assessment: *(What formal method will be utilized to measure students' knowledge/learning?)*

- The bean books/quiz can be graded, or a formative assessment can be done through out.

Extension: <http://www.youtube.com/watch?v=jm12JKhNnWY&feature=related>

Cool animated clip of a seed and how it grows.

Lesson plan template designed by Tarleton State University College of Agricultural and Environmental Sciences.

The Bean Book

By: _____

Where can you find soybeans? Almost everywhere! Soybeans can be found in all of these products...

- | | |
|----------------|----------------|
| plastic | car wax |
| paint | tofu |
| chocolate | soap |
| crayons | insulation |
| body lotion | glue |
| cooking oil | makeup |
| candles | candy |
| printing ink | cereal |
| biodiesel fuel | livestock feed |

...and so much more! Check out the ingredients listed on packages around the house or school and see what else you can find!

The bean has a cover called the **seed coat**. It protects the seed. **2**

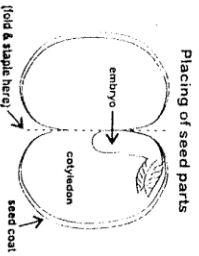
Inside the seed coat are two **seed leaves (cotyledon)**. They hold the food the new plant needs to grow. **3**

A baby plant is hiding between the seed leaves. It is called an **embryo**. **4**

Every kind of seed has three parts. They are the **embryo, stored food (cotyledon), and a seed coat**. **6**

Bean Book Instructions:

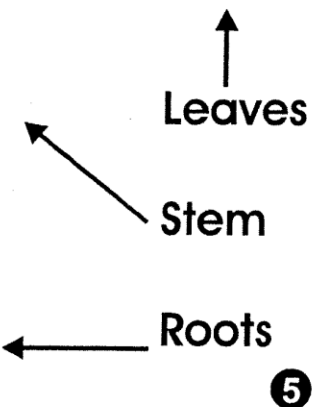
- Cut out the seed coat, seed leaves, and embryo.
- Cut apart blocks of text, following the dotted lines.
- Fold the seed leaves (yellow) into the seed coat (tan) and tuck the embryo (green) into upper center of seed leaves.
- Attach seed parts by stapling along fold.
- Using the numbers as reference (see below), glue text onto the pages of your Bean Book.
- Write your name on the cover of your book.



Place Bean Book text in the following order:

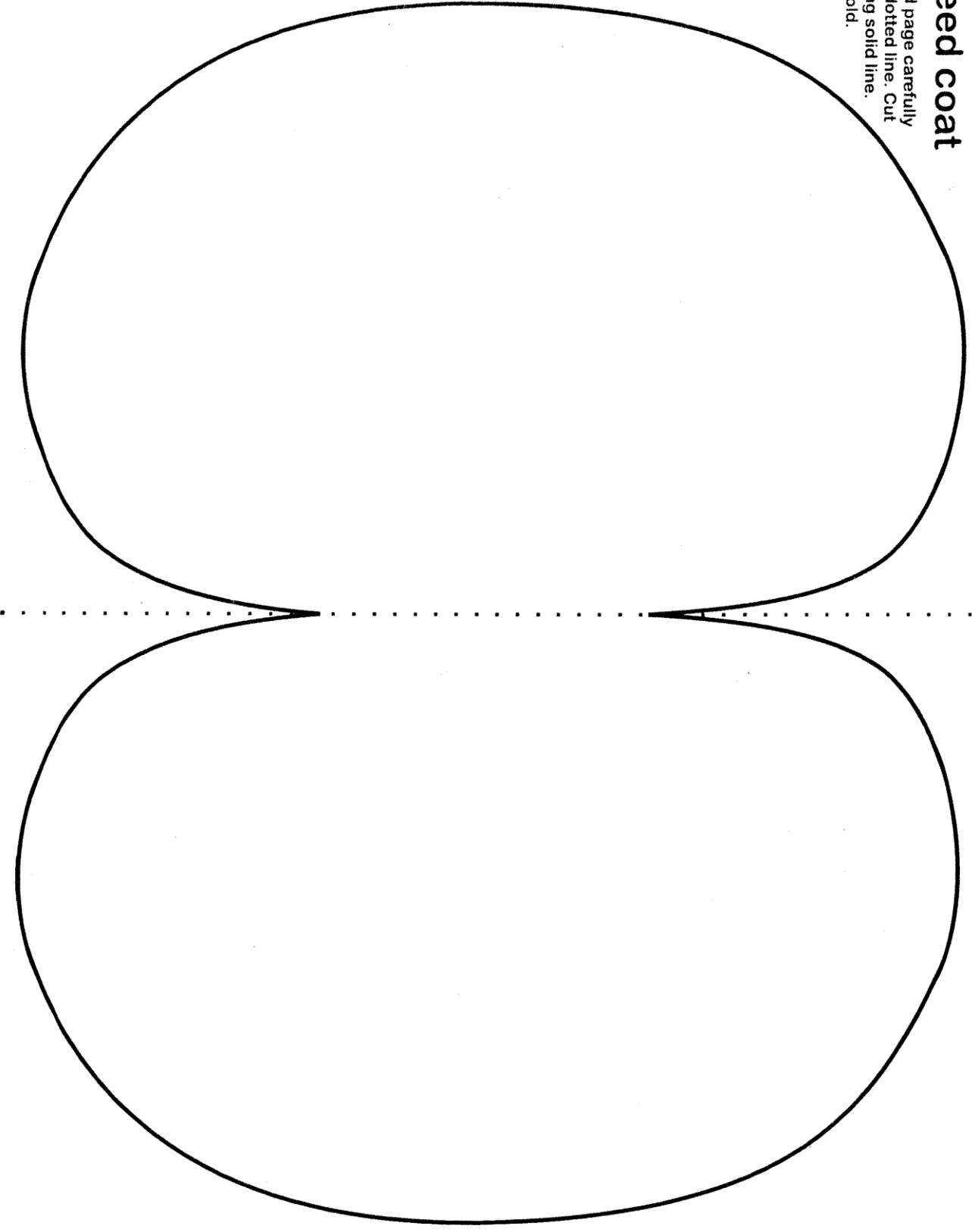
- 1 Front cover
- 2 Inside front cover
- 3 Page after inside front cover (first cotyledon)
- 4 Inside of first cotyledon, next to embryo

- 5 Inside of second cotyledon, with arrows pointing to parts of embryo
- 6 Inside back cover
- 7 Outside back cover



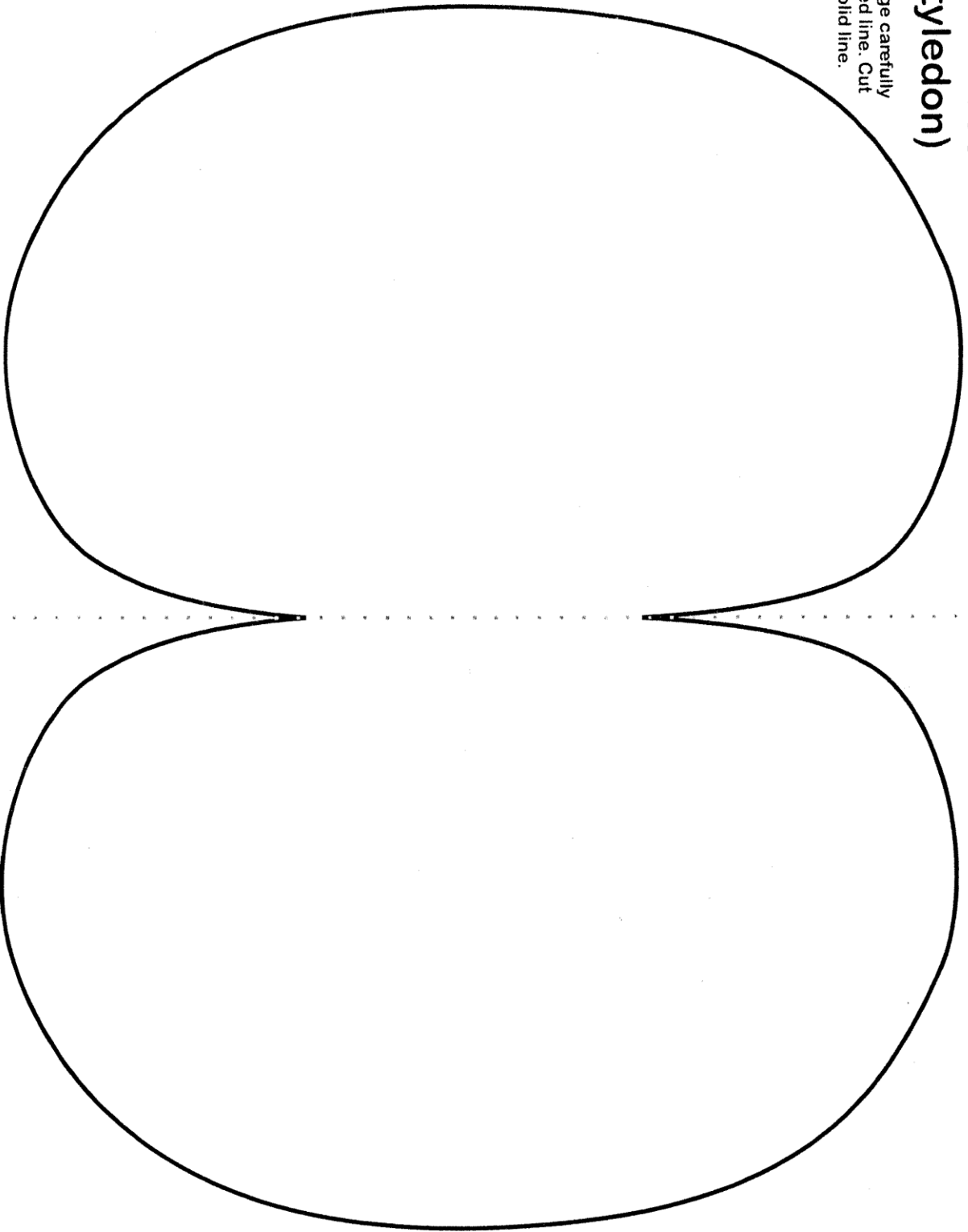
seed coat

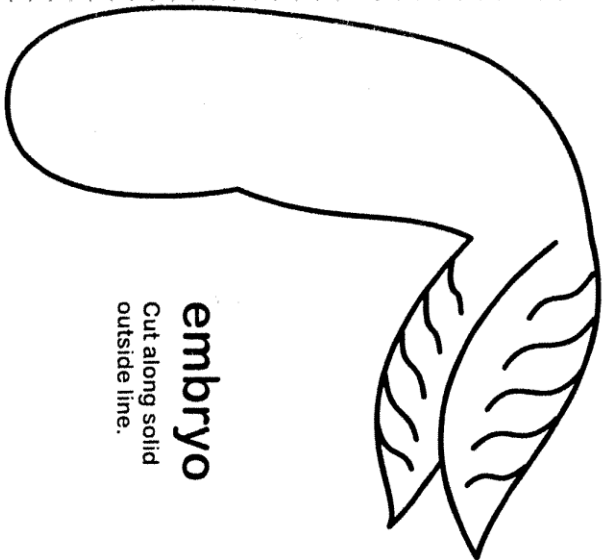
Fold page carefully
on dotted line. Cut
along solid line.
Unfold.



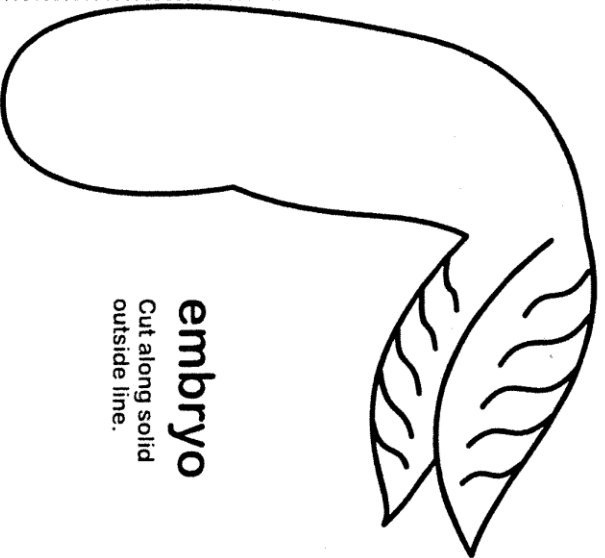
**seed leaves
(cotyledon)**

Fold page carefully
on dotted line. Cut
along solid line.
Unfold.

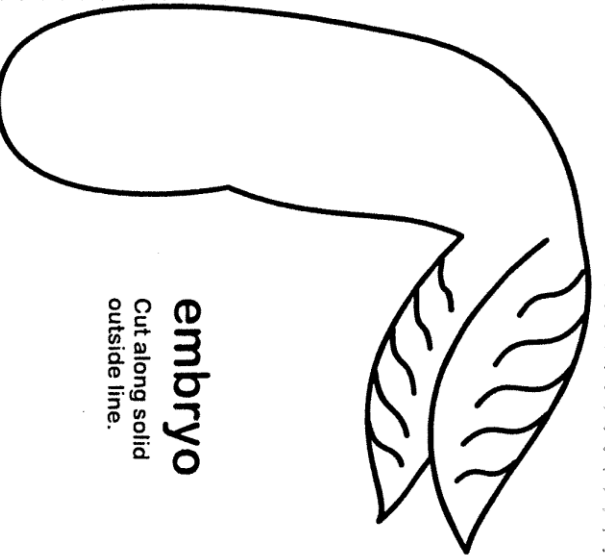




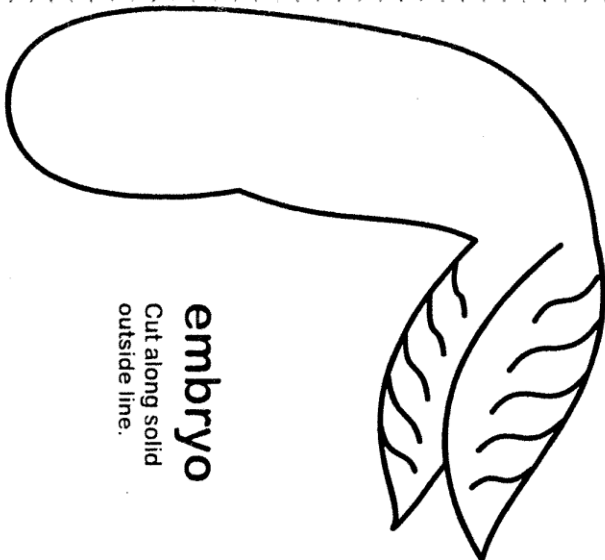
embryo
Cut along solid
outside line.



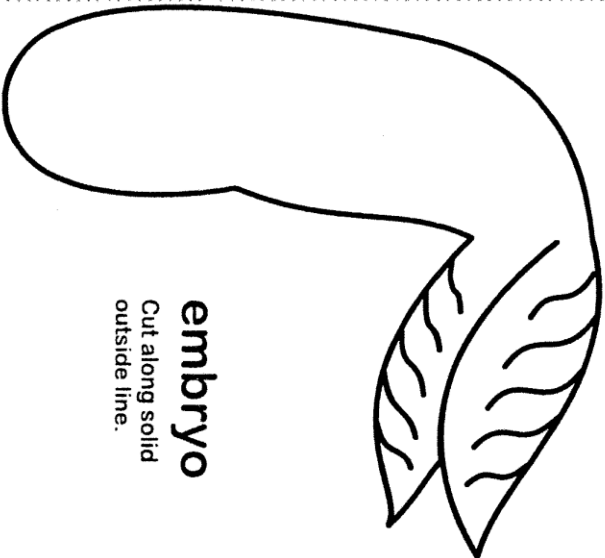
embryo
Cut along solid
outside line.



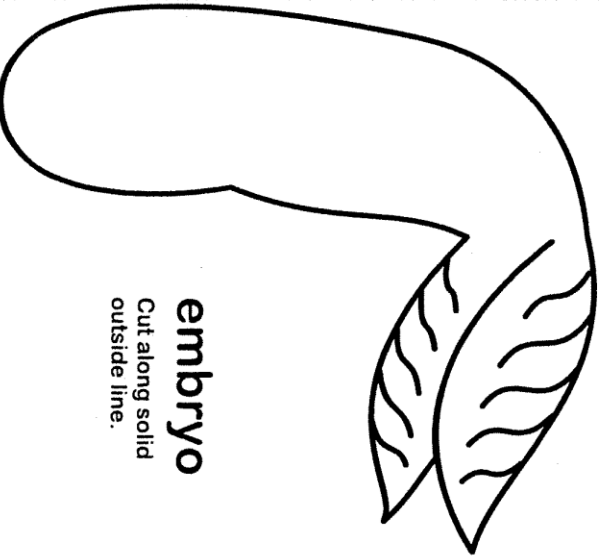
embryo
Cut along solid
outside line.



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